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**APPLICATION  
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Applicants: Hidehiko KAMEYAMA  
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TOLL NUMBER RETRIEVAL FUNCTION  
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
APPLICATION FOR LETTERS PATENT

Title: PORTABLE TELEPHONE TERMINAL WITH TOLL NUMBER  
RETRIEVAL FUNCTION

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# PORTABLE TELEPHONE TERMINAL WITH TOLL NUMBER RETRIEVAL FUNCTION

## BACKGROUND OF THE INVENTION

The present invention relates to a portable telephone terminal device. More particularly, this invention relates to a portable telephone terminal device provided with toll number retrieval function.

### 5 Description of the Prior Art

Formerly, when an originating subscriber performs a toll call originating using a portable telephone, generally, the originating subscriber performs dialing of a virtual subscriber's number after a toll number of a place where a communication partner exists. For that reason,  
10 the originating subscriber, even though, knows an exchange code of a virtual destination, when a toll number is unknown, the originating subscriber obtains a toll number to be performed dialing due to retrieval of a telephone directory or a guide service of a toll number.

However, there is problems that when the originating subscriber performs a toll call originating using a conventional portable telephone,  
15 time is required for searching a toll number to be performed dialing, and that is complicated, and further time and cost are required.

Further, for instance, Japanese Patent Application Laid-Open No. HEI 9-172480 discloses "PORTABLE TELEPHONE". A place name  
20 information which includes principal communication partners' address and toll number corresponding thereto, is stored in RAM (Random Access Memory). When the user inputs the place name information (for instance YOKOHAMA) by using a keyboard in order to perform a toll call originating to a certain communication partner, the toll number ("045")  
25 corresponding to the place name is displayed on the display means such as LCD ( Liquid Crystal Display Device) and so forth.

Moreover, Japanese Patent Application Laid-Open No. HEI 9-

64960 discloses TELEPHONE NUMBER DISPLAY METHOD AND DEVICE in which the telephone number and its related information are stored in the telephone number table of the telephone as data, thus the data being displayed by the display in answer to necessity.

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### SUMMARY OF THE INVENTION

In view of the foregoing, it is an object of the present invention, in order to overcome the above-mentioned problem, to provide a portable telephone terminal with toll number retrieval function in which, in a portable telephone capable of inputting and displaying character, there is function for retrieving corresponding name of municipalities or toll number from a telephone number or municipalities inputted beforehand.

According to a first aspect of the present invention, in order to achieve the above-mentioned object, there is provided a portable telephone terminal device which comprises a storage section for storing therein name of municipalities and corresponding toll number, a means for retrieving the name of municipalities from the storage section while being taken the toll number inputted from an input means to be a retrieval key, and a means for displaying the name of municipalities which is retrieved.

According to a second aspect of the present invention, in the first aspect, there is provided a portable telephone terminal device, which further comprises, a means for retrieving a toll number from the storage section, while being taken a name of municipalities inputted from the input means to be a retrieval key, and a means for displaying the toll number which is retrieved.

According to a third aspect of the present invention, there is provided a portable telephone terminal device which comprises a state discrimination means for discriminating whether an information inputted from an input means is a toll number or a name of municipalities, a

storage means for storing data of name of municipalities and toll number, a retrieval means, when the toll number is inputted from the input means, retrieves corresponding name of municipalities to the toll number from the storage section, while when the name of municipalities is inputted  
5 from the input means, the retrieval means retrieves corresponding toll number to the name of municipalities from the storage section, and a display means for displaying data which is retrieved.

According to a fourth aspect of the present invention, in the third aspect, there is provided a portable telephone terminal device, wherein it  
10 is selected whether he or she inputs a toll number or a name of municipalities from the input means by the fact that he or she sets the input means to a dialing mode or a character input mode respectively, and the state discrimination means discriminates whether an information inputted from the input means is a toll number or a name of  
15 municipalities while detecting this mode.

According to a fifth aspect of the present invention, in the third aspect, there is provided a portable telephone terminal device, wherein when a predetermined retrieval key is pressed down in the input means, the retrieval means starts retrieval of the storage section with an input  
20 information as a retrieval key, while until the retrieval key is pressed down, there is implemented input and editing of numerals or a character code from the input means.

According to a sixth aspect of the present invention, in the third aspect, there is provided a portable telephone terminal device, wherein  
25 when the retrieval means implements retrieval of a name of municipalities, the retrieval means retrieves name of municipalities from telephone number stored in a terminating history function storing therein telephone number of a call originating side at the time of terminating and/or from telephone number stored in a re-dialing function.

30 According to a seventh aspect of the present invention, there is

provided a storage medium storing therein a program for executing respective processing (a) to (d) by means of a computer of a portable telephone, which comprises the processing of:

(a) a processing for discriminating whether an information  
5 inputted by an input means is a toll number or a name of municipalities, while detecting mode of the input means which is set either a dialing mode or a character input mode in accordance with the fact that a retrieval is performed by either a toll number or a name of municipalities,

(b) a processing for retrieving data of corresponding name of  
10 municipalities to an inputted toll number from a storage section for storing therein data of name of municipalities and toll number when there is judged that a toll number is inputted from the input means, at the case where pressing down of predetermined retrieval key by the input means is detected continuously to input of the toll number,

(c) a processing for retrieving data of corresponding toll number to  
15 an inputted name of municipalities from a storage section for storing therein data of name of municipalities and toll number when there is judged that a name of municipalities is inputted from the input means, at the case where pressing down of predetermined retrieval key by the input  
20 means is detected continuously to input of the name of municipalities, and

(d) a processing for controlling so as to display to be outputted data which is retrieved to a display system output device.

## 25 CONFIGURATION OF ENFORCEMENT OF THE INVENTION

There will be described a configuration of enforcement of the present invention. In the desirable configuration of enforcement of a portable telephone, referring to Fig. 1, there is provided with an input means (1), a state discrimination means (2) for discriminating whether an  
30 information inputted from the input means (1) is a telephone number (toll

number) or a name of municipalities, a storage section (4) for storing data of the name of municipalities and the corresponding toll number, a retrieval means (3) for retrieving data of the corresponding name of municipalities to the telephone number from the storage section (4) when telephone number is inputted from the input means (1), while for retrieving corresponding telephone number to the name of municipalities from the storage section (4) when name of municipalities is inputted from the storage section (4), and a display means (5) for displaying data which is retrieved.

In the desirable configuration of the enforcement, when an information inputted from the input means (1) is the toll number, a dialing mode is set, while an information is the name of municipalities, a character input mode is set. The state discrimination means (2) discriminates whether the information inputted from the input means (1) is the toll number or the name of municipalities while detecting this mode.

In the desirable configuration of the enforcement, when a predetermined retrieval key is pressed down in the input means (1), the retrieval means (3) starts retrieval of the storage section (4) with an input information as a retrieval key, while until the retrieval key is pressed down, input and editing of numerals and character code from the input means (1) are implemented.

In the desirable configuration of the enforcement, the retrieval means (3) implements, at the time of retrieval of the name of municipalities, retrieval of telephone number from a telephone number stored in terminating history function for storing therein telephone number of a call originating side at the time of the terminating, or from a telephone number stored in re-dialing function.

In the desirable configuration of the enforcement, following each processing (a) to (d) can be realized by a program which is executed in the

processing elements (computer) of the control section (10). The program is stored in a storage medium such as ROM (Read Only Memory), Memory Card and so forth. The content of the storage medium is loaded on a memory such as RAM and so forth, thus being executed on the computer.

5 (a) a processing for discriminating whether an information inputted from the input means is a toll number or a name of municipalities, while detecting mode of the input means (1), which is set either a dialing mode or a character input mode in answer to either a toll number retrieval or a name of municipalities retrieval;

10 (b) a processing for retrieving corresponding name of municipalities to the inputted toll number from the storage section (4) storing therein data of the name of municipalities and corresponding toll number thereto when there is discriminated that the toll number is inputted from the input means (1) since the user inputs the toll number, continuously, the user presses down a predetermined retrieval key;

15 (c) a processing for retrieving corresponding toll number to the inputted name of municipalities from the storage section (4) storing therein data of the name of municipalities and corresponding toll number thereto when there is discriminated that the name of municipalities is inputted from the input means (1) since the user inputs the name of municipalities, continuously, the presses down a predetermined retrieval key; and

(d) a processing for controlling so as to display to be outputted the retrieved data to a display device (5).

25 The above and further objects and novel features of the invention will be more fully understood from the following detailed description when the same is read in connection with the accompanying drawings. It should be expressly understood, however, that the drawings are for purpose of illustration only and are not intended as a definition of the limits of the invention.

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## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a view showing a configuration of an embodiment of the present invention; and

Fig. 2 is a flowchart showing a processing flow of the embodiment  
5 of the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A preferred embodiment of the present invention will be described in detail in accordance with the accompanying drawings. Fig. 1 is a view  
10 showing a configuration of an embodiment of the present invention. Referring to Fig. 1, a portable telephone terminal with a toll number retrieval function of the present embodiment comprises a key input means 1 for inputting characters and numerals such as telephone number and name of municipalities and so forth, a control section 10 for  
15 performing retrieval processing and so forth due to program control, and a display system output device 5 displaying data retrieved by the control section 10.

The control section 10 is provided with a state discrimination means 2 for discriminating whether a character string inputted by the  
20 key input means 1 is telephone number (toll number) or a name of municipalities, a toll number table 4 in which data of the name of municipalities or the toll number is stored therein, and a table retrieval means for retrieving data of the name of municipalities or the toll number stored in the toll number table 4.

Fig. 2 is a flowchart for explaining a processing flow of the  
25 embodiment of the present invention, that is a view showing flowchart of a program incorporated in the control section 10. There will be described operation of the present embodiment of the invention referring to Figs. 1 and 2.

30 The user of the portable telephone selects whether he retrieves a

toll number or he retrieves a name of municipalities by using the key input means 1. When the user retrieves a toll number, the user inputs the name of municipalities of the object (name of place) in order to input the name of municipalities while setting a character input mode by the key  
5 input means 1 (STEP S1, S2).

When the input of the name of municipalities is completed, the user inputs a retrieval key predetermined beforehand, which is provided for the sake of retrieval at the key input means 1.

In STEP S3, there is judged whether or not the retrieval key is  
10 pressed down. It is capable of being performed input of the character and correction thereof by using the key input means 1 until when the retrieval key is pressed down (NO branch of STEP S3).

When there is recognized that the retrieval key is pressed down (YES branch of STEP S3), there is implemented retrieval of the toll  
15 number (STEP S4).

When corresponding toll number is retrieved (YES branch of STEP S5), there is displayed the toll number retrieved beforehand to the display system output device 5 (STEP S6). On the other hand, when the corresponding toll number is not retrieved in the toll number retrieval  
20 processing of STEP S4 (NO branch of STEP S5), there is displayed the matter that there is no corresponding data to the display system output device 5 (STEP S7), thus returning to input state of the name of municipalities, again (STEP S2).

Furthermore, when the user retrieves the name of place, the user  
25 inputs the toll number of the object while setting a dialing input mode by using the key input means 1 in order to input the toll number (STEP S1, S8).

When the input of the toll number is completed, the user inputs the retrieval key predetermined beforehand, which is provided for the key  
30 input means 1 for retrieval. In STEP S9, there is judged whether or not

the retrieval key is pressed down. It is capable of being performed input and correction of the toll number until when the retrieval key is pressed down (NO branch of STEP S9).

When there is recognized that the retrieval key is pressed down  
 5 (YES branch of STEP S9), the retrieval of the name of municipalities is implemented (STEP S10). The portable telephone terminal with toll number retrieval function is constituted that, at this time, it is capable of retrieving the name of municipalities from a telephone number stored in function (terminating history) for storing telephone number of a call  
 10 originating side at the time of terminating, or a telephone number stored in redialing function.

When the corresponding name of municipalities is retrieved (YES branch of STEP S11), there is displayed the whole name of municipalities retrieved beforehand to the display system output device 5 (STEP S12).  
 15 On the other hand, the corresponding name of municipalities is not retrieved (NO branch of STEP S11), there is displayed that there is no corresponding data therein, on the display system output device 5 (STEP S13), thus returning to input state of a toll number again (STEP S8).

Hereinafter, there will be described processing of a retrieval of the  
 20 toll number (0495) of Kamikawa Machi (Saitama Prefecture) by way of a retrieval of a toll number. The user inputs Kamikawa Machi while setting a character input mode by using the key input means 1 in order to input Kamikawa Machi (STEP S1, S2). The retrieval of the toll number is implemented while pressing down the retrieval key after inputting (STEP  
 25 S3, S4). When the toll number (0495) of Kamikawa Machi is retrieved, (0495) is displayed on the display system output device 5 (STEP S5, S6).

On the other hand, when the toll number can not be retrieved caused by an error of character input or the like, displaying on the display output device that there is no corresponding data therein, thus returning  
 30 to character input screen again, subsequently, retrieval is implemented

again after correction of character input (STEP S5, S7, S2).

Next, there will be described processing for retrieving corresponding name of municipalities to (0492) by way of retrieval of a name of municipalities. At this case, the user inputs (0492) while setting  
5 mode to dialing input mode by using the key input means 1 in order to input (0492) (STEP S1, S8). There is implemented the retrieval of the name of municipalities while pressing down the retrieval key after dialing input (STEP S9, S10). Then, when the corresponding name of municipalities to (0492) is retrieved, displaying the whole corresponding  
10 names of municipalities on the display system output device 5 (STEP S11, S12).

On the other hand, the corresponding name of municipalities can not be retrieved caused by an error of dialing input or the like, there is displayed on the display system out put device 5 that there is no  
15 corresponding data, thus returning to the dialing input screen again, subsequently, retrieving again after correction of the error (STEP S11, S13, S8).

The portable telephone of the present embodiment is suitable for use in the case where when the user makes a journey and so forth, the  
20 user intend to hear a weather forecast of the end of his journey.

There will be described another embodiment of the present invention. From February 1998, a postal code is subdivided in a district level of municipalities. When function of postal code discrimination which is used in a post office is utilized in the toll number retrieval of the  
25 present invention, it is capable of being possessed of a postal code retrieval function.

As described above, according to the present invention, when a toll number is unknown although the exchange code is known, the user can obtain the toll number immediately, thus there is the effect that  
30 serviceable characteristic of the portable telephone is improved.

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While preferred embodiments of the invention have been described using specific terms, such description is for illustrative purpose only, and it is to be understood that changes and variations may be made without departing from the spirit or scope of the following claims.